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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/775,823	02/10/2004	Wolfgang Albrecht	NI 162	8181
7590 07/18/2006			EXAMINER	
KLAUS J. BACH & ASSOCIATES PATENTS AND TRADEMARKS 4407 TWIN OAKS DRIVE MURRYSVILLE, PA 15668			HON, SOW FUN	
			ART UNIT	PAPER NUMBER
			1772	

DATE MAILED: 07/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>		<b>Applicant(s)</b>	
	10/775,823		ALBRECHT ET AL.	
	<b>Examiner</b>		<b>Art Unit</b>	
	Sow-Fun Hon		1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 June 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) 10-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☒ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION**

***Response to Amendment***

***Election/Restrictions***

1. Applicant's election of claims 1-9 in the reply filed on 6/7/06 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

***Withdrawn Rejections***

2. The 35 U.S.C. 112, 2<sup>nd</sup> paragraph rejections of claims 6,9 are withdrawn due to Applicant's amendment dated 6/7/06.
3. The 35 U.S.C. 103(a) rejections of claims 1-9 are withdrawn due to Applicant's amendment dated 6/7/06.

***New Rejections***

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

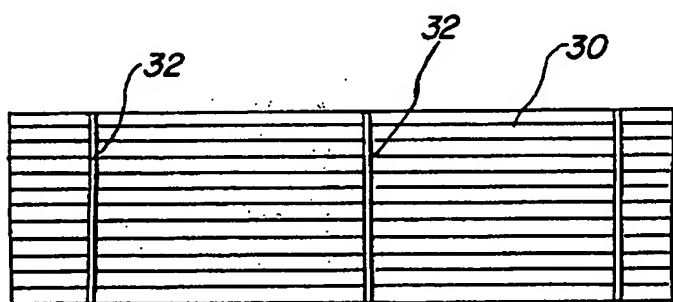
A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 5-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Kopp (US 4,346,006).

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Regarding claim 1, Kopp teaches a membrane body (diffusion membrane unit, abstract) comprising in Fig. 3, shown below, a flat array of capillary membrane tubes 30, with junction lines 32 crossing the array of membrane tubes 30 in transverse straight lines (column 4, lines 62-66), wherein both the tubes and the junction lines may comprise similar material (cellulose, column 5, lines 1-3) which forms the membranes (column 1, lines 63-68). Thus the membrane body of Kopp as shown in Fig. 3 below, comprises at least one flat membrane (junction lines 32, Fig. 3) and a hollow membrane (capillary membrane tubes 30, Fig. 3) extending longitudinally along the at least one flat membrane, as defined by Applicant's disclosure (Figs. 1, 2a-b), and being at least partially surrounded by said at least one flat membrane (junction lines 32, Fig. 3, of adhesive material, column 1, lines 50-55, cellulose material used to form tubes also used as the adhesive material to join the membrane tubes, column 1, lines 65-68, adhesive means applied by a solution, spray, an applicator roller, column 3, lines 1-2).

**FIG. 3**

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Regarding claim 5, Kopp teaches that said hollow membrane and said at least one flat membrane consist of at least one polymer (membrane material, cellulose, polycarbonate, polypropylene, column 2, lines 3-10).

Regarding claim 6, Kopp teaches that at least two hollow membranes are provided to form a hollow membrane mat (flat, two-dimensional single-layered array of capillary membrane tubes 30, column 4, lines 62-65, Fig. 3) consisting preferably of polypropylene (column 2, lines 7-11).

Regarding claim 7, Kopp teaches that the flat membrane is manufactured from a polymer solution (cellulose used to form tubes also used as the adhesive, column 1, lines 65-68, adhesive may be applied by a solution spray, column 3, lines 1-2).

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 2, 4, 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kopp as applied to claims 1, 5-7 above, and further in view of Gerlach (US 4,744,906).

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Kopp teaches a membrane body comprising at least one flat membrane and a hollow membrane extending longitudinally along the at least one flat membrane and being at least partially surrounded by said at least one flat membrane, as described above.

Regarding claims 2, 4, Kopp teaches that the hollow membrane and the at least one flat membrane are interconnected (diffusion action can take place through the tube walls that are in contact with the adhesive material, column 1, line 68, column 2, lines 1-2), but fails to teach that the hollow membrane and the at least one flat membrane are interconnected over the length of the hollow membrane, or that the hollow membrane is fully surrounded by said at least one flat membrane over the length thereof.

However, Gerlach teaches an embodiment of a membrane body (foil, column 8, lines 22-25) wherein the hollow membrane is embedded with the help of a polymer solution (hollow fiber membrane, column 8, lines 41-42) for the purpose of providing the desired combination of permeability and selectivity (column 4, lines 10-14). Hence the hollow membrane is fully surrounded by and interconnected with the other material over the length of the hollow membrane.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided the hollow membrane fully surrounded by and interconnected with the at least one flat membrane over the length of the hollow membrane, in the membrane body of Kopp, in order to provide the desired combination of permeability and selectivity properties, as taught by Gerlach.

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Regarding claim 9, Kopp fails to teach that the membrane body includes reinforcement structures in the form of one of particles, fleece and fiber structures which are contained in the polymer solution from which the membrane is manufactured.

However, Gerlach teaches that the membrane body is formed from a polymer solution (column 3, lines 49-60) and includes fiber structures such as webs or fleeces (column 7, lines 8-10) which function as reinforcement structures as defined by Applicant's specification (page 4, lines 9-15). Although Gerlach fails to teach that the reinforcement structures are contained in the polymer solution from which the membrane body is manufactured, the limitation "disposed in the polymer solution" is a process limitation during the manufacture of the membrane body, and is therefore not given any patentable weight. Even though product by process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. See MPEP 2113 [R-1].

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided the membrane body of Kopp with reinforcement structures in the form of one of particles, fleece and fiber structures which are contained in the polymer solution from which the membrane is manufactured, in order to provide the desired reinforcement, as taught by Gerlach.

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6. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kopp in view of Gerlach, as applied to claims 2, 4, 9 above, and further in view of Baurmeister (US 6,214,232).

Kopp in view of Gerlach teaches a membrane body comprising at least one flat membrane and a hollow membrane extending longitudinally along the at least one flat membrane and being fully surrounded by said at least one flat membrane over the length thereof, as discussed above. Kopp in view of Gerlach fails to teach that said hollow membrane is surrounded over its length by at least two flat membranes disposed at opposite sides of the hollow membrane.

However, Baurmeister teaches a membrane body wherein the hollow membrane is surrounded by at least two flat membranes disposed at opposite sides of the hollow membrane (single or multi-layer flat membranes 23, hollow fiber membranes 2, column 21, lines 18-25, Fig. 6) for the purpose of providing the desired functional configuration.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have surrounded the hollow membrane over its length by at least two flat membranes disposed at opposite sides of the hollow membrane in the membrane body of Kopp in view of Gerlach, in order to provide the desired functional configuration, as taught by Baurmeister.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kopp as applied to claims 1, 5-7 above, and further in view of Thakore (US 4,954,145).

Kopp teaches a membrane body comprising at least one flat membrane and a hollow membrane extending longitudinally along the at least one flat membrane and



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being at least partially surrounded by said at least one flat membrane, as described above. In addition, Kopp teaches that the flat membrane is manufactured from a polymer solution (cellulose used to form tubes also used as the adhesive, column 1, lines 65-68, adhesive may be applied by a solution spray, column 3, lines 1-2), but fails to teach that said polymer solution is 10% polyacrylonitrile/dimethylformamide polymer solution.

However, Thakore teaches that a polymer solution of polyacrylonitrile/dimethylformamide (column 3, lines 35-39) forms an asymmetric type membrane (column 3, lines 42-44), while a polymer solution of polypropylene forms an isotropic membrane (column 1, lines 33-39). Thakore fails to teach a 10% solution concentration.

However, Thakore teaches that a 21% solution forms an ultra-thin membrane (column 3, lines 35-45). Thus it would have been obvious to one of ordinary skill in the art to have decreased the solution concentration to 10% for the purpose of forming an even thinner membrane.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used a 10% polyacrylonitrile/dimethylformamide solution in place of the polypropylene solution in the membrane body of Kopp, in order to obtain an asymmetric membrane with the desired extra ultra-thinness, as taught by Thakore.

***Response to Arguments***

8. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number is (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached at (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (571)273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

*S. Hon*

Sow-Fun Hon

07/07/06

*Harold Pyon*

HAROLD PYON

SUPERVISORY PATENT EXAMINER

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7/10/06